

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing

(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION

See paragraph 2 below

International application No.
PCT/US2004/028920

International filing date (day/month/year)
03.09.2004

Priority date (day/month/year)
03.09.2003

International Patent Classification (IPC) or both national classification and IPC
B05D3/02, B05D7/00

Applicant

E.I. DUPONT DE NEMOURS AND COMPANY

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITYInternational application No.
PCT/US2004/028920

IAP20 Res'd PCT/PTO 08 FEB 2006

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/028920

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-12
	No: Claims	
Inventive step (IS)	Yes: Claims	1-12
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-12
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/US2004/028920

IAP20 Rec'd PCT/PTO 08 FEB 2006

Re Item V

(1) US-B1-6 291 027

(2) US-A-4 943 447

1. The subject matter of independent claim 1 is neither disclosed nor suggested by the prior art. To avoid defects such as pops, bubbles, blisters or pinholes on the coating of a substrate, the applicant has found that the process parameters such as convection or infrared heating, air velocity, air temperature, process time, must follow very specific conditions. These conditions which are required for the performance of the drying process are not disclosed by the prior art. According to present claim 1 in a first drying step, cold air having a temperature ranging from about 20° C to about 40° C for a period of about 30 seconds is used to volatilize at least a portion of volatile material from the liquid basecoating composition, the velocity of the air at a surface of the basecoating composition being about 0.3 to about 1 meter per second; in a subsequent drying step heated air is applied to the basecoating composition for a period of about 30 seconds to 2 minutes, the velocity of the air at the surface of the basecoating composition being about 1.5 to about 15 meters per second, the air having a temperature ranging from about 30° C to about 90° C; and in a final step infrared radiation and heated air simultaneously applied to the basecoating composition for a period from about 30 seconds to 2 minutes, the velocity of the air at the surface of the basecoating composition being about 1.5 to 5 meters per second, the air having temperature of from about 30° C to about 60° C, such that a sufficiently dried basecoat is formed.
2. Document (1) discloses a much more elaborate process that includes four steps: (a) exposing the basecoating composition to air having a temperature ranging from about 10° C. to about 30° C for a period of at least about 30 seconds to volatilize at least a portion of volatile material from the liquid basecoating composition; (b) applying infrared radiation and warm air simultaneously to the basecoating composition for a period of at least about 30 seconds to achieve a peak temperature of the substrate ranging from about 20° C to about 60° C; (c) applying infrared radiation and hot air simultaneously to the basecoating composition for a period of at least about 30 seconds such that a dried basecoat is formed upon the surface of the substrate.

3. Document (2) discloses a conventional prior art processes for coating a metal substrate, comprising the steps of: (a) applying a liquid basecoating composition to the surface of the substrate; (b) exposing the basecoating composition to heated air; (c) applying a infrared radiation an warm air to said composition; and (d) applying a liquid top coating composition over the dried base coat. Document (2) is silent about the specific temperature ranges, air velocity and the heating rates disclosed in claim 1. Furthermore, a person skilled in the art does not get any hint to modify the process known from document (1) in the way mentioned above.
4. Consequently, the subject matter of claim 1 is novel, involves an inventive step and is industrially applicable (Article 33(2)-(3) and (4) PCT).
5. The features of dependent claims 2 to 12 represent further embodiments of the drying process according to claim 1. These claims meet therefore the requirements of the PCT regulation.